

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 4-7 remain in the application. Claims 6 and 7 have been amended. Claims 1-3 have been previously canceled.

In the second paragraph under item 2 on page 2 of the above-identified Office Action, dependent claims 6 and 7 have been rejected as being indefinite under 35 U.S.C. § 112, second paragraph.

More specifically, the Examiner states that it is unclear whether the step of patterning the first layer occurs prior to or after the activating step (recited in independent claim 4).

Claims 6 and 7, which depend directly or indirectly on claim 4, have been amended to recite that the patterning of the first layer occurs before the first layer is entirely activated and before the second layer is applied.

Support for these changes may be found on page 7, lines 15-16, page 4, lines 4-5, and in Example 5 on page 13 of the specification of the instant application.

It is accordingly believed that claims 6-7 meet the requirements of 35 U.S.C. § 112, second paragraph. The above noted changes to the claims are provided solely for clarification or cosmetic reasons. The changes are neither provided for overcoming the prior art nor for any reason related to the statutory requirements for a patent.

In the first item under "Claim Rejections - 35 USC 103" on page 3 of the above-identified Office Action, claims 4-7 have been rejected as being unpatentable over Arbach et al. (U.S. Patent 5,021,129) (hereinafter "Arbach") in combination with Boyko et al. (U.S. Patent 6,212,769) (hereinafter "Boyko") or Amelio et al. (U.S. Patent 4,448,804) (hereinafter "Amelio") or vice versa, further in combination with Bickford et al. (U.S. Patent 5,800,858) (hereinafter "Bickford") under 35 U.S.C. § 103(a).

Independent claim 4 has not been amended, because it is believed to be patentable over the prior art in the form previously presented as discussed hereinbelow..

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful. Claim 4 calls for, *inter alia*, a process for metallizing at

least one insulating layer of an electronic or microelectronic component, by:

activating the entire first insulating layer by treatment with an activator, the activator being at least one of a gas, a liquid, a solution, and a plasma;

then, after activating the entire first insulating layer, applying and patterning a second insulating layer made of a photosensitive material; and

then, after applying and patterning the second insulating layer, seeding and metallizing regions of the first insulating layer that are exposed by the patterning step. (emphasis added)

Arbach does not disclose a photolithographic method, and does not disclose or suggest "applying and patterning a second insulation layer made of a photosensitive material" as recited in claim 4. Nor does Arbach disclose activating the entire first insulating layer by treatment with an activator as set forth in independent claim 4. Arbach is completely silent with regard to providing process steps according to the present claimed invention. Because of the basic deficiencies of Arbach, the Examiner finds it necessary to form a mosaic of

references in an unsuccessful attempt to show the claimed invention.

The Examiner states that Arbach shows forming a first electroactive layer and then a second electroactive layer. Subsequently, the second electroactive layer is structured in order to form exposed regions. The exposed regions of the first layer are then activated by seeding and subsequently metallized in order to form conductor lines (conductive tracks).

Arbach uses only materials for the two layers which have a different redox potential, since only one activation method is disclosed. Activation is accomplished by using electrons, which are provided with a potential selected such that it can be assured that there is sufficient potential so that the exposed regions can be activated.

Furthermore, in Arbach the seeding is performed immediately after the activation. This means that, between the activation of the exposed first layer and the seeding of the activated partial region, no further layer is formed on the activated region of the first layer.

This is in contrast to the present invention, which provides a

flexible method for applying a metal layer onto an insulating layer without requiring additional seeding.

The present invention achieves this by providing the entire first layer being activated prior to the application of the second insulating layer, and then the second layer being applied, as recited in independent claim 4. Since the activation of the first layer is performed prior to the application of the second layer, which is possible because fluids, solution or plasma is activated by a gas, it is not necessary to form the second insulating layer from a different material than the first insulating layer. The subsequent seeding only takes place on the exposed regions of the activated first insulating layer so that no unnecessary or additional seeding is used.

An important feature of the present invention is that an activation of the first layer maintains its effects regarding the seeding, even if the activated layer is covered with a second layer prior to seeding, which second layer is subsequently structured in order to expose partial regions of the activated first layer. Thus, the method according to the present claimed invention is much more flexible with regard to material selection without requiring more seeding.

Arbach discloses forming a first electroactive layer and then a second electroactive layer. Subsequently, the second electroactive layer is structured in order to form uncovered (exposed) regions. These exposed regions are activated by seeding and then metallized to form conductor lines. According to Arbach the materials used for the two layers must have a different redox potential, because only one activation method is disclosed and activation is achieved by using electrons having a potential selected such that, by using the potential, only the exposed regions can be activated, not the entire first insulating layer as claimed. This kind of activation shows the disadvantage, for example, that a voltage source and a cabling must be provided, which is eliminated by the method according to the claimed invention. Thus, the process according to the present claimed invention is significantly simpler than the method disclosed in the prior art as typified by Arbach, in particular by eliminating cabling. Arbach does not disclose **seeding and metallizing regions of the first insulating layer** that are exposed (by the patterning) **after applying and patterning the second insulating layer.**

Further, it is submitted that a person of skill in the art having Arbach before him, would not necessarily look to Boyko

or Amelio to make up for the deficiencies of Arbach, or to arbitrarily add features as suggested by the Examiner.

In Boyko and Amelio, the entire surface of a first layer is roughened, however, in both references, the entire surface, which includes even those regions on which there are no metallizations, i.e., no conductor tracks are formed, is subsequently seeded. Thus, the quantity of the required seeding is significantly increased. It is not technically practical or feasible to "reduce the amount of seeding" as alleged by the Examiner as the basis for combining the secondary references with Arbach. Exactly the opposite of what the Examiner hopes to accomplish would occur, because such a combination of references would actually increase the quantity of the seeding. According to Arbach, only the exposed regions of the first layer are activated and seeded after the structuring of the second layer, so that the required seeding used in Arbach is less than that used in Boyko or Amelio.

Bickford does not overcome the deficiencies of Arbach or any combination of Arbach with Boyko or Amelio, notwithstanding that such a combination is improper. Bickford also discloses a method for metallizing insulation layers, where a first

insulation layer is activated, and a second insulation is embodied on the first activated insulation layer. The second insulation is subsequently structured so that partial areas of the first activated insulation layer are freed. The partial areas are subsequently seeded and a metallization is then carried out on the embodied seeding. The claimed invention is not disclosed or suggested by a combination of Arbach and Boyko or Amelio, and Bickford.

It is submitted that the only basis for even combining the references as proposed by the Examiner is hindsight reconstruction of the prior art after having read applicants disclosure.

The references do not show "activating the entire first insulating layer by treatment with an activator, the activator being at least one of a gas, a liquid, a solution, and a plasma; then, after activating the entire first insulating layer, applying and patterning a second insulating layer made of a photosensitive material; and then, after applying and patterning the second insulating layer, seeding and metallizing regions of the first insulating layer that are exposed by the patterning step" as recited in claim 4.



Nor do the references show the feature of "patterning the first insulating layer before the entire first layer is activated and before the second insulating layer is applied" as recited in dependent claims 6 and 7 of the instant application.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 4. Claim 4 is, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claim 4 and further because claims 6 and 7 per se recite limitations that are not shown in the prior art.

In view of the foregoing, reconsideration and allowance of claims 4-7 are solicited.

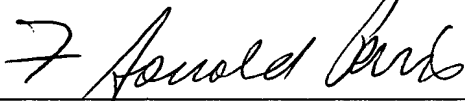
In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out. In the alternative, the entry of the amendment is requested, as it is believed to place the application in better condition for appeal, without requiring extension of the field of search.

Appl. No. 09/817,963  
Amdt. dated 10/22/04  
Reply to Office action of 5/25/04

Petition for extension is herewith made. The extension fee for response within a period of two months pursuant to Section 1.136(a) in the amount of \$430.00 in accordance with Section 1.17 is enclosed herewith.

Please charge any other fees that might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,



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FDP/bb

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